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The Steward

Newsletter of Alberta's Natural and Protected Areas and the People Who Care for Them

CANADIANA

DEC 13 1994

Issue 27

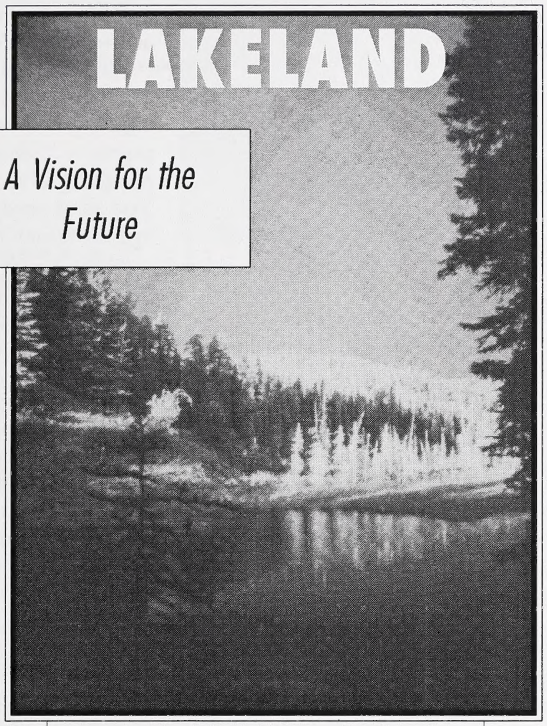
Summer 1994

Naturally Yours

The Natural Areas Program is sponsored by Alberta Forestry, Lands and Wildlife

LAKELAND

A Vision for the Future



by Peter Lee

Without a vision, we just drift. The following is a vision for a very Special Place— Lakeland —and was prepared to describe how Albertans may want Lakeland to be in the future.

Lakeland serves to protect an outstanding example of Alberta's boreal mixedwood forest. It is truly a special place: an invaluable legacy for future generations. Lakeland is best known for the diversity of its landscapes (especially its marvellous old-growth forests and unspoiled lakes), and of its plant and animal communities. The diversity underpins Lakeland's status as one of Alberta's largest protected areas possessing regional, national and international significance for nature conservation. The integrity of Lakeland's landscapes and ecosystems—and thus its quintessential wildland character—is maintained using an innovative, holistic, "Nature knows best" management ethos.

Attracted by its ecological richness and high quality research, scientists and student groups visit Lakeland to study numerous aspects of boreal forest natural history. With a membership drawn from both local and distant communities and from all walks of life, the "Friends of Lakeland" volunteer group plays an important cooperative role in the promotion and stewardship of Lakeland.

Lakeland Provincial Park has the potential to be a renowned ecotourism destination: a place where environmentally responsible (low impact, non-consumptive, self-propelled) recreational activities can be enjoyed in a beautiful setting. The park is the location of Alberta's only readily accessible wildland canoe circuit. It is a refuge for plants, animals and people; a place where natural forces and processes still hold sway; a sanctuary that offers solitude, peace and quiet, spiritual renewal and physical challenge; a haven where people can re-establish close contact with nature. Visitors accept Lakeland Provincial Park on its own terms. Only those types and levels of human activity that Lakeland's environment can sustain will take place within the park.

Like the park, Lakeland Provincial Recreation Area also offers ecotourism experiences. In addition, because it has a much larger land base and bigger lakes, it also supports carefully controlled levels of more intensive, consumptive and mechanized recreational activities, as well as limited industrial, natural resource exploitation. Here again, though, because the provincial park and provincial recreation area constitute a single ecosystem complex, environmental protection is the pre-eminent concern. This strong conservation ethic serves to guide all management planning and operational practices in Lakeland.

Lakeland is becoming an important component of the tourism industry in northeast Alberta. Tourists visit Lakeland throughout the year. Communities adjacent to Lakeland—indeed, the Lakeland Tourism Zone as a whole—derive substantial economic benefits from these visitors.

In short, Lakeland is a developing success story. Establishment of Lakeland will generate significant environmental, social and economic benefits. Lakeland is assuming its rightful place as a vital, deeply cherished component of Alberta's natural heritage.

More about Lakeland on page 6.

Steward Profile: Peter Sherrington

by Pamela McCluskey

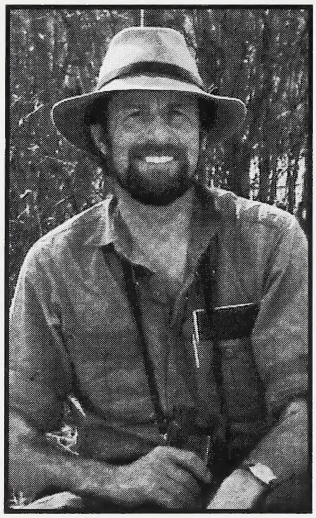


Photo by Thomas Vogt

Peter Sherrington is not a volunteer steward himself but his enthusiasm for volunteer stewardship could not be greater. In the last year he has been to the Mt. Lorette Natural Area (where Des Allen is a volunteer steward) about 150 times to study raptor migration and breeding bird ecology (see *Steward* issues #12 and #20). His activities have led him to propose a new role for stewards. For now, he's calling it, "Roving Stewards". I talked to this busy man about the Roving Stewards and other things on his first Monday as an Alberta Wilderness Association Director. Peter is also a very active member of the Calgary Field Naturalists Society and President of the Rocky View Trail Association.

Peter is a geologist/palaeontologist. His work in the oil industry took him all over the world including South America, the South Pacific and the Middle East. He has called Canada home since 1972. One of his last positions in the oil industry was as director of an aid project intended to help the Jordanians develop their oil and gas industry. He left the project for a number of reasons, "the least of which was not the Gulf War."

After returning from Jordan, Peter decided to take a year off. That year has turned into four. He now does some consulting work out of his home to help pay the bills, but, as he says, "I'm much too busy to find a job. And the raptor migration project is too exciting and too important to leave to go sit at a desk all day. I don't think I could do it."

He has been studying birds for about 25 years and enjoys teaching about birds (he led sessions at the last Natural Areas Steward Conference). He believes it is important for birders to go past identifying species, that is merely the beginning. He says birders and other naturalists must take the next step and learn what to do with their data. They must make sense of what they are seeing by making systematic records. Collecting and putting this data together is important work if we are to increase our knowledge.

Peter sees great potential in volunteer stewards learning about the detailed ecology of areas. "Stable areas studied over the long term give you real information on what is there and how it is changing. Natural areas are a valuable tool for long-term monitoring of wildlife."

Peter's and Des Allen's experiences with the eagles at Mt. Lorette serve as a good example. Des took Peter there and in 1992 he saw an eagle. "That one eagle has turned into 18 000 over three years."

"One of the biggest lessons from Mt. Lorette is that here we've got at least 5500, possibly 7000 eagles passing over the area in migration, they are not small birds, they are not secretive, they don't fly at night, they are flying right across four major highways, it is a large-scale flight, it's regular, it happens twice a year. Yet it was never seen. Or if it was seen, it wasn't recognized or understood or noted down. If we can miss this or not understand it and its significance, what else are we missing?"

Volunteer stewards are in good positions to help fill knowledge gaps if they are given the right tools. Peter says all that is needed is for people to "Go out there, keep your eyes open, recognize what you're seeing and note it down. You don't need any fancy equipment. In your eyes, ears and brain you have everything you need."

It is in helping volunteer stewards do this, that the "Roving Stewards" come in. Roving Stewards would not be site-specific stewards; they would be another type of Stewards. They could be Stewards who already monitor a natural area. And Roving Stewards would also be a way of involving people who want to contribute to our knowledge of Alberta's protected places but cannot make a commitment to a particular site. You don't have to be an "expert" to be a Roving Steward. As Peter says, "We're all beginners, some of us are just better beginners." Roving Stewards would simply have a special knowledge that they want to share.

The important thing is to record data over time and then make linkages. For example, someone knowledgeable about plants can go into a natural area with a steward who has been observing insects to point out what to look for in terms of plant-insect relationships. A Roving Steward might help a site-specific steward set up a method for recording weather. A Roving Steward can lead a regional workshop on basic habitat-mapping. Peter believes, "Finding out how 'bits' work with other 'bits' is the first step. It is the most difficult and the most critical step."

But the benefits of taking this step are numerous. "We need continuous records of the same spot." We need to know what is out there to make informed decisions. "We need viable information now."

Stewards would get to know one another and each others' areas. Peter calls this "matrixing" of the stewards, and it can only make the organization stronger.

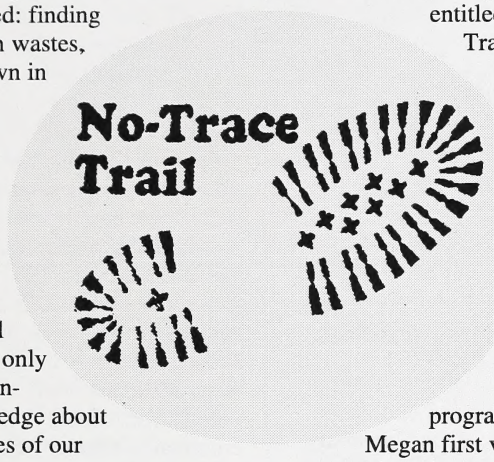
As well, stewards themselves would benefit. They would learn valuable skills and techniques. They would get to know their protected areas better. But Roving Stewards would not just share knowledge. They would share joy and enthusiasm and the feeling that what stewards do is important. Because, as Peter puts it, "It really is!" ◀

Hiking

The No Trace Trail

Reprinted from: EPIC April 1994

Once upon a time, wilderness survival meant the ability of people to survive the wilderness. Today, it can mean: can wilderness survive people? Most of us have grim stories of wildlands defiled: finding unburied human wastes, or garbage strewn in our favourite pristine haunt. We feel personally assaulted. How do we get the idea across that leaving no evidence of our visit to a natural area is easy? It only takes a little planning and knowledge about the consequences of our actions.



This is what No-Trace is all about—leaving no trace of your having been there. No-Trace use of natural areas is a way of thinking, which results in a way of acting. It protects the land so everybody can continue to enjoy it.

Whether you're in the badlands, an aspen forest, a prairie coulee, a mountain pass, a lakeshore or the vacant lot next door, all of the guidelines of No-Trace can be used.

As well, this attitude toward the land can be applied through any outdoor activity - hiking, camping, fishing, snowmobiling, ice climbing...

Though there are places and times where choices must be made on how best to reduce your impact on an area, a basic way of thinking remains: leave the least amount of evidence of your visit on the land.

Eric Kuhn and Megan Koop, supervisors of Interpretation and Education in Kananaskis Central District, have developed a program entitled "No-Trace Trail" to teach minimum impact to school students and to other groups using the backcountry. The No-Trace Trail is a two-part program. Eric or Megan first visit the classroom and introduce the concept of wilderness and set up the No-Trace display either in Kananaskis Country or in their school gymnasium. The trail consists of 12 display stations keyed to an accompanying work booklet. The stations and work booklet use highly visual, sometimes comical, images to get across principles of minimum impact.

Teachers are provided with follow-up activities and a resource manual with background information.

The materials used in the display are low-cost, recycled or donated. The approach of displays keyed to worksheets can be adapted for use in museums or nature centres and can be used to cover may topics.

For more information: contact Eric or Megan at Bow Valley Provincial Park: ph. 673-3663.

New Opportunity for Stewards of Alberta's Protected Areas

What?

The Roving Stewards

As discussed in the last issue of *The Steward*, the opportunities for natural areas stewards are expanding to include other kinds of protected areas. The type of stewardship has also become more flexible with the introduction of the Roving Steward. The idea is to have people with special knowledge share that knowledge with protected areas stewards. Roving Stewards is an opportunity for people who cannot commit to a specific site to contribute to the Program and a way for Stewards who already monitor a site to share their techniques with others. It also is an opportunity for site-specific stewards to increase their knowledge and skills and learn more about their areas.

How?

We are looking at implementing the Roving Stewards in a number of ways:

Creating a Directory of Roving Stewards—people who want to be roving stewards would send us their names, telephone numbers and what skills they would like to share. We would match these roving stewards up with site specific stewards who want to learn more about those topics.

Having a Help Wanted/Help Offered Section in the *Steward* —Roving Stewards tell us what they would like to share and site-specific stewards tell us what they would like to learn and we will advertise this information.

Setting up Regional Workshops—we will help Roving Stewards lead a number of site-specific stewards in training sessions in their areas.

- Any Ideas About Roving Stewards?
- Want to Become A Roving Steward?
- What Skills Do You Want to Learn?

For information or to share your ideas, contact Sandra Myers at 427-5209.

Chicken of the Woods

Photograph by Victor Olsoff.

Reprinted from the Alberta Naturalist vol.22 no.4

by Bill Richards

For the past several seasons, the Edmonton Mycological Club has visited Shaw Lake group campsite, near Lac la Biche, for an extended mycological foray. In 1991, the annual foray to Shaw Lake was held on the long weekend starting Friday, August 30. Conditions had been dry for weeks before the outing, which resulted in fungi specimens being in short supply. The participants decided to leave for home early (Sunday morning) because of these conditions, rather then spend another fruitless day.

Shortly after departing, about 1 km from the group campsite, I saw a brilliant flash of orange from the corner of my eye. After bringing the car to a stop, we ran back to investigate and, to our surprise, we found a cluster of orange and sulphur yellow bracket fungi. We immediately guessed that what we were looking at was a *Laetiporus sulphureus* (chicken-of-the-woods or sulphur shelf). The identification was soon confirmed with the assistance of our ever-present library of mycological field guides. Believing we had found the first specimen of this fungus in the province, we collected a voucher sample, which was subsequently deposited in the Provincial Museum of Alberta Herbarium (accession No. C91.7.9), and a culinary sample, which was quickly relished.

On checking with other herbaria in Alberta, I discovered and confirmed that Bob Danielson of the University of Calgary had made a personal collection of *L. sulphureus* in 1976 in the Bragg Creek area on what he believed to be was a white spruce stump (Danielson personal communication 1992).

Only one living specimen of Laetiporus sulphureus was found near Shaw Lake; it was growing on a balsam fir (*Abies balsamea*) stump in a mature white spruce/balsam fir/ balsam poplar forest. However, there were several other stumps and logs in the vicinity, in addition to the specimen site, which showed the chalky remains of previous years' growth.

This pleasant-scented fruiting body was semicircular and succulent when fresh, but was chalky, lightweight and brittle when dry. In situ this fungus was acting like a siphon, literally drawing moisture from the ground through the stump. The specimen consisted of an overlapping, fleshy, smooth-surfaced, orange-yellow caps with sulphur-yellow pores. The flesh was up to 5 cm thick, tapering to 1 cm on the fringes. There was no stem, and the fungus appears from the substrate as "soft yellow knobs when first emerging, then they grow into shelves, often forming large clusters..." (Schalkwijk-Barendsen 1991).

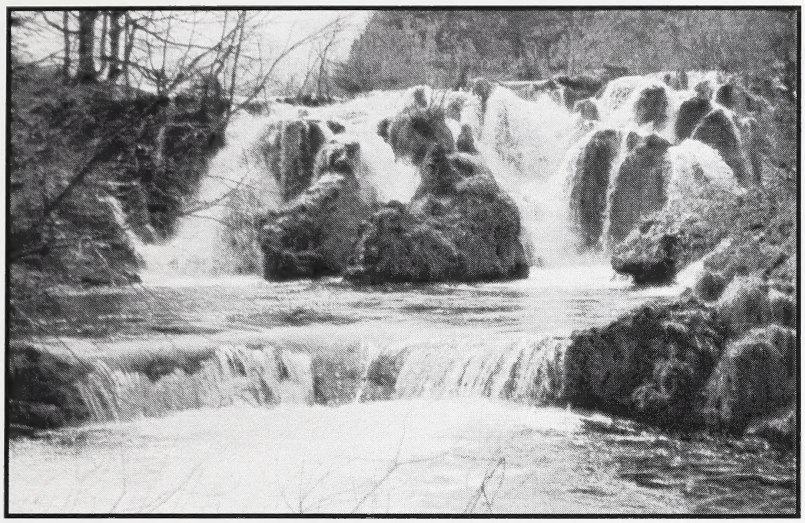
Gilbertson and Ryvarden (1986) indicate *Laetiporus sulphureus* has at some time been recorded for Alberta. Unfortunately, the record used in the 1986 publication was simply repeated from an earlier publication (Lowe and Gilbertson 1961). Professor Gilbertson suspects that the Alberta record was based on one of the major North American herbaria he and Lowe used for the 1961 synopsis, and to his knowledge there are no Alberta accounts in any other literature. Professor Gilbertson also said that he is surprised that there are not more records for Alberta as *L. sulphureus* is common in Glacier National Park and in other localities in western Montana (Gilbertson, personal communication, 1992).

Gilbertson, R.L. and L. Ryvarden. 1986. North American Polypores, Volume 1, Fungiflora. Oslo, Norway

Lowe, J.L. and R.L. Gilbertson. 1961. Synopsis of the Polyporaceae of Western United States and Canada. Mycologal, 53: 474-511.

Schalkwijk-Barendsen, Helene M.E. 1991. Mushrooms of Northwestern Canada. Lone Pine Publishing, Edmonton.

PLITVICE LAKES NATIONAL PARK
(FORMER YUGOSLAVIA)



Milke Trine Waterfall

by Dragomir Vujnovic

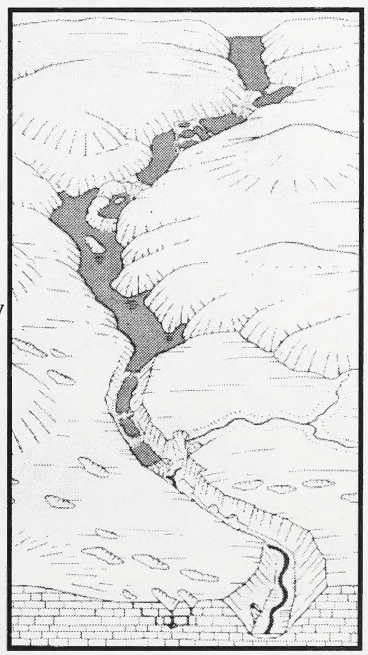
Editor's Note:

Dragomir ("Drajs") Vujnovic came from the former Yugoslavia nine months ago where he worked as a biologist within the former Yugoslavia National Parks System. He is also an accomplished illustrator and, during the period he worked with us, produced several pen and ink drawings of plants for our program.

Forty-five years ago, on April 8, 1949, the Plitvice [plit-vih-tsay] Lakes area was declared a national park. It covers an area of 19 462 ha of which 15 715 ha are forest, 217 ha are lakes and streams, and the rest is meadows and arable land in the vicinity of villages and hamlets. About 3000 ha are privately owned while the socially owned (government-owned) areas were under the Plitvice Lake National Park management.

The Plitvice Lakes National Park lies in a mountainous region of former western Yugoslavia and ranges from 408 m to 1280 m above sea level. The park attendance had reached a figure of 800 000 visitors per year.

Plitvice Lakes lie in a valley between mountains strung out in a step-like series of travertine (limestone deposits) barriers of the Korana River headwaters. The river valley is crossed by natural dams that create a series of small river lakes (16) connected to each other by waterfalls and cascades.



The formation of travertine is geologically young. Its growth is highly dependent on climatic conditions, soil and numerous diverse organisms remaining undisturbed by man's interventions.

The Plitvice Lakes lie on a boundary between maritime and continental climates. They have relatively warm autumns and hot summers that are modified by elevation above sea level. Precipitation is equally distributed over all four seasons and provides permanent soil moisture.

The area of the national park, overlying dolomites and limestones, is covered by a luxuriant forest growth. The mixedwood forest is a natural protective belt regulating the richness of springs and slowing the flow of water, thus preventing erosion and floods. The thick layer of leaf litter on the forest floor is inhabited by a rich variety of fungi and different kinds of decomposer vertebrates. All these organisms produce abundant carbon dioxide, which becomes trapped in the soil.

Groundwater mixing with this carbon dioxide makes carbonic acid. As this acidic water flows underground, it dissolves old carbonate rock, the product of ancient seas, and forms an eroded, porous parent rock called "karst." Karst relief is characterized by swales, sinkholes, caves and underground watercourses. Precipitation from a large area accumulates in

(continued on page 10)

Lakeland

The Blackburnian Warbler and Old-growth Forests in Lakeland

by W. Nordstrom
Natural Heritage Protection & Education Branch
Parks Services

Blackburnian warblers belong to a group of warblers which are characteristic of mixedwood old-growth forests. Other species in this group include the magnolia, Cape May, black-throated green, blackpoll, yellow-rumped and bay-breasted warblers. These species live in or among the trees and feed by gleaning foliage-dwelling insects.

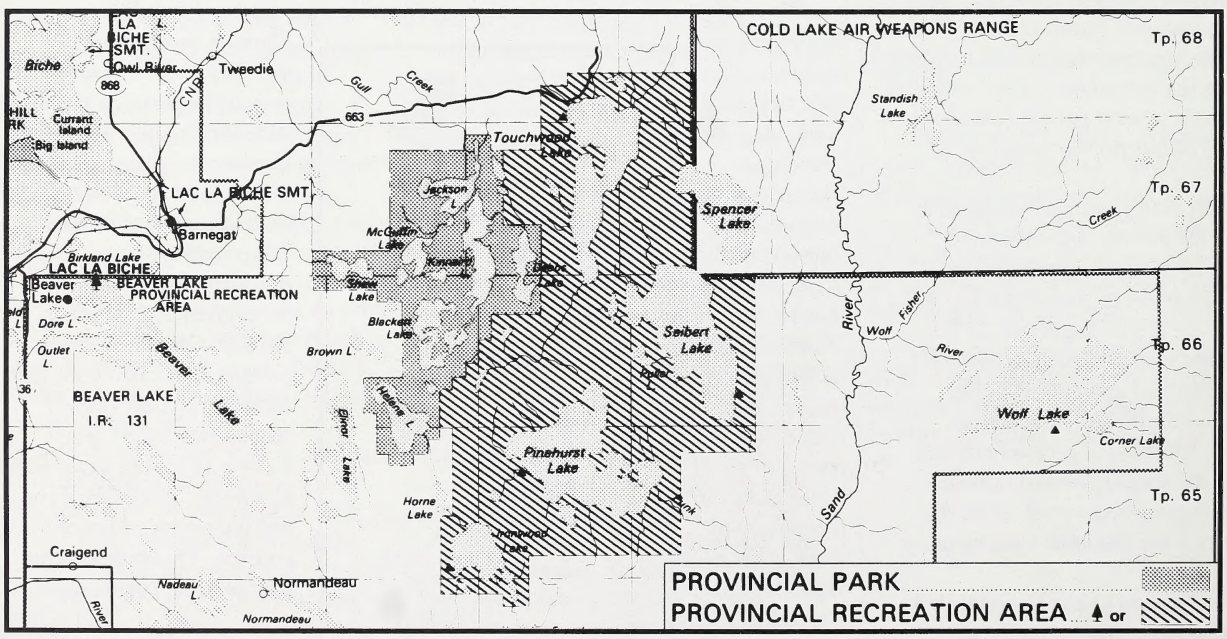
The blackburnian warbler appears to be heavily dependent on old coniferous forests or coniferous-dominated forests where foliage-dwelling insect prey are common. During the breeding season, blackburnians generally inhabit the upper foliage of tall white spruce in these forests. In Alberta, the summer breeding range of this warbler extends over the east-central part of the province (Semenchuk 1992), particularly the Cold Lake and Lac La Biche areas.

(continued on page 7)

Lakeland's Role in Special Places 2000

Lakeland is Alberta's first major provincial park within the Boreal Forest Natural Region. It was designated to protect an outstanding example of the Central Mixedwood Subregion of the Boreal Forest that includes some superb tracts of old-growth forest. The park will make a significant contribution to the protection and heritage appreciation objectives of Special Places 2000.

Lakeland has international importance for the conservation of biodiversity as is demonstrated through its role as a breeding stronghold for an impressive variety of neotropical migratory songbirds—many of which depend upon old-growth, mixedwood forests for nesting. These birds are Alberta's ecological connection to the severely endangered tropical forests of Latin America.



$11.00

Do the Wild Thing

With the

Alberta Watchable Wildlife Calendar

The new Alberta Watchable Wildlife Calendar will be available this fall. For only $11.00 you get 12 months of Alberta's wildlife - photos, wildlife viewing tips and educational information. For each calendar sold, $5.00 will be donated to the Wildlife Enhancement Program coordinated by Alberta Fish & Wildlife Services. Calendars will be sold through various non-profit organizations who will receive $4.00 from the sale of each calendar.

For further information, or to place your order, please contact:
Maps Alberta, 14605 134 Avenue, Edmonton, Alberta, T5L 4S9
Phone: 422-1053 FAX: 422-0896

ALBERTA'S WATCHABLE WILDLIFE

Alberta
ENVIRONMENTAL PROTECTION

Alberta
ENVIRONMENTAL PROTECTION

Information Update

No. 94-137 For immediate release: Tuesday, September 12,1994

1995 WATCHABLE WILDLIFE CALENDAR

Edmonton - Wildlife enthusiasts will once again have the opportunity to enjoy Alberta's flora and fauna year-round with the launch of the third annual edition of the Watchable Wildlife calendar on September 13, 1994.

The calendars include exceptional photographs of Alberta's wildlife, handy wildlife viewing tips throughout the year and educational information on the more than 30 featured birds and animals. They are available for purchase from non-profit groups and community organizations such as your local Alberta Fish and Game Association, local 4H clubs and members of the Federation of Alberta Naturalists.

The calendars retail for $11.00 each, and a portion of the funds generated by the calendar sales go to the Wildlife Enhancement Program of Fish and Wildlife Services. The Wildlife Enhancement Program was established to help finance programs that ensure the well being and perpetuity of wildlife enhancement. Another portion of the sales provides non-profit organizations and various community groups with a fundraising opportunity.

The calendar project is sponsored cooperatively by the Alberta Sport, Recreation, Parks and Wildlife Foundation; Report A Poacher Program; North American Waterfowl Management Plan; and Alberta Environmental Protection.

Previous calendar editions have proven to be popular Christmas gifts for family, friends, teachers and people who love the outdoors. It is expected that the 1995 edition will be just as popular. If your community group, parent advisory or school club is interested in this truly "Made in Alberta" fundraising project, call Maps Alberta at 422-1053.

For further information contact:

Kathy Telfer
Communications Branch
Environmental Protection
(403) 427-8636 Fax: 422-3571

Ray Makowecki
Fish and Wildlife Services
Environmental Protection
(403) 427-6750 Fax: 422-9557

Rare Native Plant Survey Form

Please enter all information available to you. Use the back for comments if necessary. Please attach or draw a map on the back.
***Return To**: Natural Heritage Protection and Education, Alberta Parks Services, 8th Flr, 10405 Jasper Ave, Edmonton T5J 3N4.*

Scientific Name: _____ Code: _____

Common Name: _____

Reporter: _____ Phone: _____

Observation Date: _____, 19____ Collection, if Yes # _____ Herb. _____ Acc.# _____

Municipality: _____

Mapsheet: _____

Legal Twp: _____ Rge: _____ W ____ M: Section: _____ LSD: _____

Twp: _____ Rge: _____ W ____ M: Section: _____ LSD: _____

Lat.: _____ Long.: _____ Elevation: _____ (ft / m)

Location: _____

_____

Aspect: _____ Slope: _____ Moisture: _____

Habitat: _____

_____

_____

_____

Plant Community: _____

_____

_____

Landowner: _____

# of Individuals: _____ Is this a subsequent visit: no yes

Compared to last visit: _____ more; _____ same; _____ fewer.

Phenology: ____ # vegetative; ____ # adults ; ____ # juveniles; ____ # others; ____ # flowering ; ____ # fruiting

Current Land Use / Possible Threats: _____

_____

_____

_____

Should / could this site be protected? : _____ How? _____

Determination:

_____ keyed at site; give reference used: _____

_____ compared with specimen housed at: _____

_____ compared with phot/drawing in:

_____ by another person (name): _____

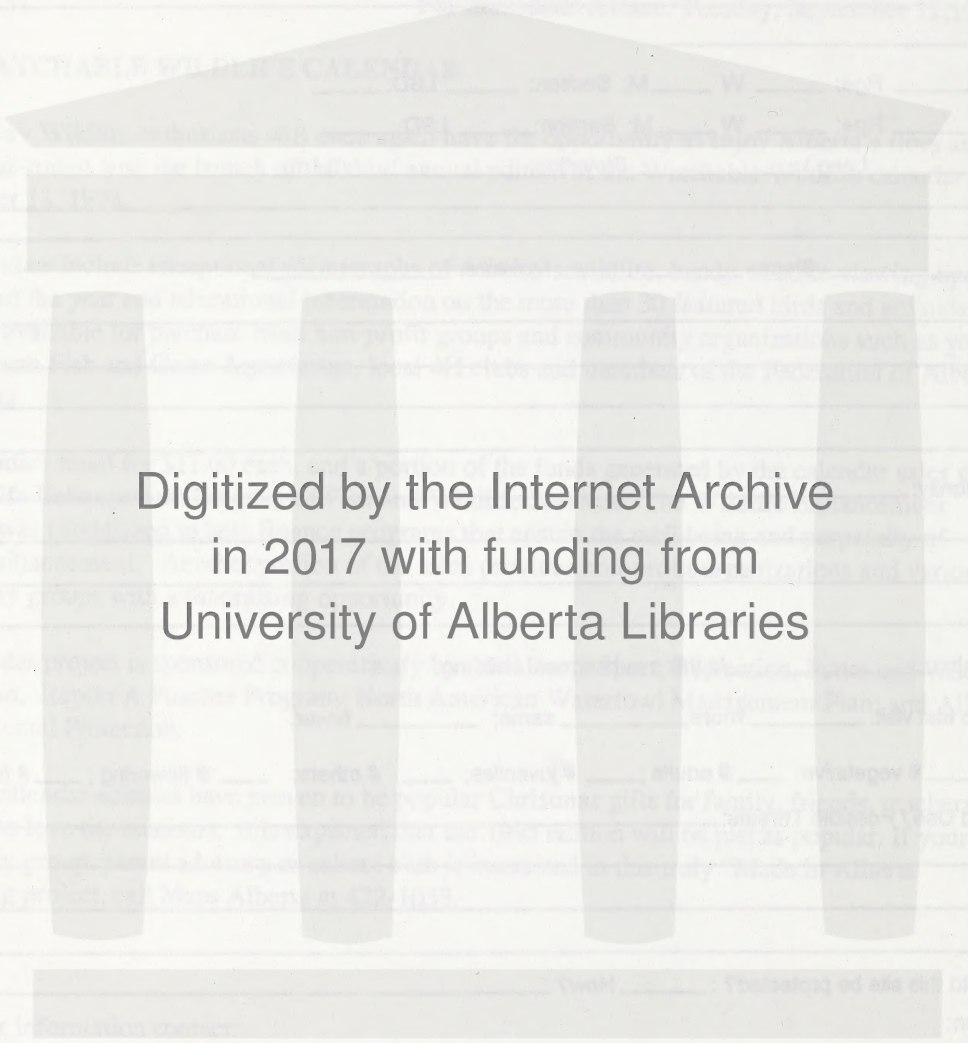
_____ other: _____

Photographs:

_____ Habitat _____ Slide

_____ Diagnostic Feature _____ Print

Date Recieved	Date Entered



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Old-growth forests adjacent to Seibert Lake.

Cottonwood Consultants' biologists in their 1993 Avian Resources Study of the Lakeland area found blackburnian warblers only in old-growth forests, particularly in white spruce-dominated mixedwoods. They recorded more than 75 males of the species in the vicinity of Touchwood, Seibert, Pinehurst and Jackson lakes. They found the Touchwood Lake area, especially, to contain concentrations of blackburnians.

To determine the extent of old-growth forests in the Lakeland area which may be of potential importance to blackburnian warbler populations, Phase III Forest Inventory data was analyzed -- particularly data on old-growth spruce and spruce-dominated mixedwoods that occur within Lakeland Provincial Park and Lakeland Provincial Recreation Area (PRA). Old growth was assumed to be those stands which were 100 years or older and 18 meters or more in height. This analysis indicated that about 1265 ha of old-growth spruce and spruce-dominated mixedwoods occur within Lakeland Provincial Park, compared to about 3179 ha within Lakeland PRA for a combined total of 4444 ha. The park, therefore, contains about 28 percent of the old growth as compared to 72 percent for the PRA, a substantial difference. Mapping of these stands indicated that the PRA contains a number of sizeable blocks of old growth. The PRA is believed to be of considerable significance in providing suitable habitat for old-growth species such as blackburnian warblers.

Further work is needed to further define the relationship between the old-growth forests in the Lakeland area and species such as blackburnian warblers. Any observations and further information relating to these warblers or other "old-growth species" in the Lakeland area would be welcomed.

For further information, you may wish to review the following publications:

Semenchuk, G. (ed.). 1992. *The Atlas of Breeding Birds of Alberta.* Federation of Alberta Naturalists, Edmonton. 391 pp.

Cottonwood Consultants Ltd. 1993. *An Overview of Wetland, Old-Growth and Riparian Avian Resources in the Lakeland Provincial Park and Recreation Area.* Prepared for Parks Services, Alberta Environmental Protection.

Old-growth forest in the Touchwood Lake Peninsula.

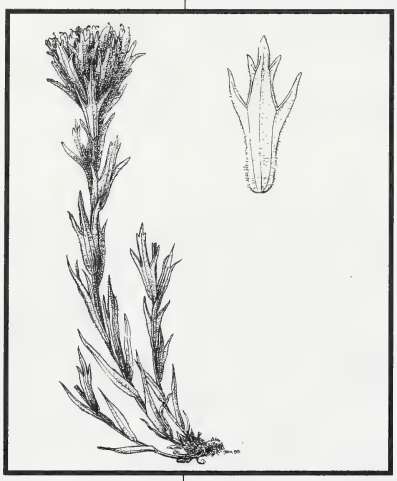
The Blackburnian Warbler

- the striking black & orange markings of the male are distinctive
- birds spend most of their time in the crowns of conifers where they are difficult to see; nests high in coniferous trees
- breeds from east-central Alberta to Maritime provinces and south to Minnesota and South Carolina
- a neotropical migrant, this species winters in Central and South America
- about one-third of its winter habitat could be lost through deforestation and other activities
- species is intolerant of disturbance to the forest structure
- species has been gradually declining in numbers over the last twenty years in parts of North America and on their wintering grounds

Keeping Track

By Lorna Allen and Joyce Gould

Even though an area may be designated as protected, just leaving it alone does not ensure that the features for which the site was protected will be maintained. Ecosystems are dynamic and constantly changing, although sometimes the changes are slow and not readily noticeable. If there is some particular feature, species or community that we wish to maintain for the long term, the only way to know if in fact it is being maintained is to monitor it. Once a decision has been made that management is required, the only way to know whether that management action is having the desired effect is to monitor.



Yellow Paintbrush Monitoring at Outpost Wetlands Natural Area

The Outpost Wetlands Natural Area is located in southwestern Alberta in a region known as one of the four richest areas for rare plants in Alberta. Of eight rare species documented in this Natural Area, yellow paintbrush is one that had been previously determined to be endangered in Alberta.

Yellow paintbrush reportedly requires ungrazed or lightly grazed lands and does not compete well with introduced grasses such as timothy and brome. Since the purchase of the Natural Area in 1987, the site has been essentially ungrazed. However, even though an absence of grazing should be beneficial to the paintbrush, brome and timothy appear to be encroaching on the population. Yearly monitoring was begun to document the status of the population over time and to recommend additional monitoring or management, if necessary.

The number of stems had increased from three, as first noted in 1989, to four in 1990. But in 1991, 1992 and 1993, the population was not detected.

Where are the paintbrushes? Gone? Buried within the meadow's dense herb and grass? Perhaps the conditions of the last few springs have been unfavourable and the plants did not emerge. Only by carefully looking for the population in a favourable year will we know its status.

Monitoring of Upland Evening Primrose and Smooth Boisduvalia at Milk River Natural Area and Kennedy Coulee Ecological Reserve

These protected areas are being managed as a single unit to protect and maintain the ecological and aesthetic character of a representative example of the Mixed Grassland Natural Region with minimal human interference. The area has been ungrazed for the past two decades and, thus, offers a good opportunity to study the effects of management efforts on the grassland structure in this part of Alberta.

The ecological reserve will continue to provide ungrazed conditions and will serve as a control against which we can measure the effects of management. Light grazing in favourable years has been introduced to the Natural Area. A monitoring program, including a component that seeks out rare vascular plants, was implemented in 1991, before the entry of cattle. The results of the program will be used to guide management strategies for the site.

Upland evening primrose is a small annual and, in Alberta, is restricted to the southeastern portion of the province. It has been documented as possibly being intolerant of heavy grazing.

At Milk River/Kennedy Coulee, upland evening primrose has been found in two locations, only one of which is the site of census work. The censused population is on the edge of the Natural Area and extends across the fenceline into the Pinhorn Grazing Reserve.

Counts of *Oenothera andina* 1991-1993

Reference Number:	1991	1992	1993
1—Pinhorn Grazing Reserve	252	3	2
2—Natural Area	67	0	19
3—Natural Area	242	0	10
Total	**561**	**3**	**31**

Since the counts in 1991 were taken before cattle grazing was begun in the Natural Area, at first glance, the data suggest that putting cattle onto the area is detrimental to this rare plant. However, results from the Pinhorn Grazing Reserve, where cattle have been on site for many years, show that cattle cannot be the cause of the low numbers of *Oenothera* over the past two years. There must be another explanation.

The year 1992 was a year of drought in southeastern Alberta and so cattle were not put onto the Natural Area that year. Still, the *Oenothera* did not come up. There was considerably more moisture in 1993, but we

(Continued on page 9)

Alberta Land Steward

Networking Opportunity Workshop

by Bill Richards

I arrived at this event just in time to help Peiter van der Schoot and his son construct a huge table and benches from lumber they had cut with the family saw mill. The table was then finished with four (4x8) sheets of oriented strand board to its full dimensions of 8 X 16 feet. The table was more than adequate for the 30 people who were soon sitting around it discussing their sites and general interests.

Peiter explained the operation of his family woodlot. Then the group was split into two. One portion got a tour of the woodlot led by Peiter. The remainder were taken on a tour of the nearby Poplar Creek Natural Area by Martin Osis, president of the Edmonton Mycological Club, and co-steward for the natural area with the van der Schoot family.

Peiter took us through a variety of forest types, explaining as we went the ages of each stand and its fire history. Eventually we came to a very recent cut-over area where the poplar trees had been selectively cut, leaving the white spruce and occasional pine tree standing. There were some poplar trees that had been surrounded by the branches of a spruce and these were removed with such care that, except for the fresh cut stump beside the still-standing spruce tree, you would never have known of the poplar's existence. The reason so little damage occurs is the equipment used has a large boom which grips the tree while the saw cuts the base. With the tree now severed, the vehicle backs out over its same track and lays the tree in a clearing where it can be processed.

After lunch, I took the second group on a tour of the natural area where we got an excellent overview of the site from the high banks of the Moose Creek. Later we examined the creek and banks from the water level. Several species of fish including young suckers were found in the creek.

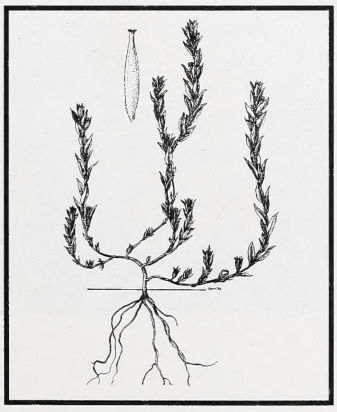
The low ground temperature was likely the main reason we didn't find any edible fungi. We did, however, find several of the of the interesting early fruiting mushrooms, including brain mushroom *(Gyromitra esculenta)* and scarlet elf cup *(Sarcoscypha hiemalis)*.

Though some had to leave for other engagements, at least 20 of us stayed on to enjoy the delicious roast pig that kept Martin and Peiter up until 4 a.m., preparing the pit, the fire and the beast. The pig was cooked Hawaiian style in a covered pit over coals and hot rocks. It was excellent—my compliments to the chefs. ◀

*(**Keeping Track**, continued from page 8)*

still have low numbers of *Oenothera*—the reasons are not clear. Perhaps the low numbers are a result of the lack of seed produced the previous year, perhaps conditions were still not right for germination of seed in the seedbank, perhaps the rains in 1993 did not fall at the right time for the plants to grow and flower. These are things that we will try to address through our monitoring program over the next few years.

The second species that we are looking at, smooth boisduvalia, is another annual member of the evening primrose family. It is also restricted to the southeastern portion of the province and is thought to be intolerant of grazing. The boisduvalia is found at one location in the Milk River Natural Area.



As with the *Oenothera*, numbers of individuals of *Boisduvalia* decreased from 1991 to 1993, which can be attributed to the weather patterns over those years. The lowest count was obtained in 1992, a year when cattle were not on the site.

The monitoring of these two annual plants has suggested several things:

- numbers of individuals of annual species are intimately linked to climate;
- it is important to monitor populations over a period of several years;
- current management practices do not appear to be the reason for the decrease in numbers. The introduction of cattle onto the Natural Area may not be adversely affecting these populations; and
- monitoring of populations does not need to be an expensive, elaborate procedure. Simply counting the numbers of plants during a specified stage of growth, over several years, can tell a great story.

We will continue to do counts of individuals at the sites of these populations for at least the next two years. We should be making decisions on the management of these sites only as a result of information from long-term monitoring programs. ◀

*(**Plitvice Lakes**, continued from page 5)*

the subsurface and, restricted by the impervious substratum, emerges in various sizes of karst springs, which flow into streams that feed the lakes' system with water rich in dissolved carbonates.

In this karst landscape, one particular area stands out--it contains deeper and older layers of Mesozoic rocks made up of carbonates but also of clay and marl impervious to water. In this region lie the Upper Lakes. The Lower Lakes are in the steep-sided limestone canyon.

Once its temperature warms sufficiently, the surface flowing water undergoes chemical changes that cause calcium carbonate to settle out and carbonic acid levels to increase. Travertine formation begins with this deposition of a fine calcereous sediment on all organic and inorganic objects in the water. This sediment essentially fossilizes the thick growth of mosses in many overflow channels. The thicker the mosses, the thicker the travertine formed. The greatest deposition of travertine occurs at the spillpoints where water tumbles down from one lake to another. These spillpoints are the sites of the highest travertine barriers, some reaching 50 m in height.

The nature of travertine deposition results in a variety of travertine formations such as lakes, tarns (called "burget"), barriers, waterfalls, drapes and caves. At overflows and spillpoints, the barriers grow 1-3 cm higher every year, as do the water levels of the overflowing lakes behind the barrier. As the base of the overflow continues to rise, eventually the water will shift to a lower spillpoint along the barrier. These shifts gradually raise the entire width of the barrier from one side of the watercourse in which it lies to the other. On steep edges of the barrier, travertine growth progresses following the shape of an arch, forming drapes, arcades and caves. At the base of waterfalls, a number of ponds or tarns are usually formed, bordered by layers of travertine descending in a step-like manner, connecting lakes with one or more upstream water bodies.

Over a lifetime one can witness great changes in the magnificent natural features of travertines. In their perpetual growth and transformation, are subject to certain periodicities--daily, annual and long-term--which are dependent on the temperature and cleanliness of water. Consequently, changes of climate over geological periods can induce vigorous travertine formation during warmer cycles, and total stagnation and destruction in glacial eras.

The present system of barriers at Plitvice has been formed in the last 4000 years, whereas in the interval between 6000 and 22 000 years ago, no travertine formation was recorded. However, the Plitvice Lakes contain remnants of numerous travertine systems that came into existence before the last glacial era. The future of the Plitvice Lakes, as in the past, will depend on its own biodynamic process, and on protection from human activities.

To protect this complex ecosystem as well as possible, the area of the national park was split into three zones of protection.

The first zone includes all the water bodies and a 200-m wide surrounding belt of forests. This zone prohibits any kind of exploration of water or forest. At present, only paths and bridges to visit the lakes are present.

The second zone includes forests on steep hills and old growth forests with characteristics close to the virgin forests. This zone prohibits forest management by man.

The third zone includes all other land. This zone allows sanitary and selected logging, and some kinds of buildings for local inhabitants.

In addition to the national park, four areas are set aside as strictly forest reserves. These forests, which cover about 80 ha each, are left to grow naturally without influence by man.

In 1979, the Committee for the Protection of the World Cultural and Natural Resources nominated the Plitvice Lakes as a World Heritage Site. ◀

Site Activities

April 15 to June 1, 1994

A regular feature to keep volunteer stewards and interested individuals informed of activities occuring on our sites.

Bear River: Cleanup completed by South Peace Club

Bellis North: Letter of Authority issued for Alberta Orienteering Championships June 4-5, 1994

Clearwater River: Seismic program approved with conditions

Coyote Lake: Edmonton Plant Study Group conducted May Species Count on May 28, 1994

Eagle Creek: proposed seismic program rejected

Hastings Lake: Strathcona Natural History Club/Hastings Lake Hyper-Hikers group tour: April 16/94

Holmes Crossing: Seismic program approved with conditions

J.J. Collett: wildfire burned approximately 30-40 acres on April 16, 1994

Jackpines: notice to designate site advertised in local paper

MacIntosh Lake: seismic program approved with conditions

Moose Mountain: seismic program approved with conditions

Mt Livingstone: two proposed seismic programs rejected

Noel Lake: brush clearing of hazard trees along fenceline approved

North Buck Lake:seismic program approved with conditions

Paintearth Coulee: seismic program approved with conditions

Riverlot 56:cultivation plan approved to control field scabious and Canada thistle weeds

Rocky Rapids: seismic program approved with conditions

Saskatoon Mountain: reclamation plan for old radar site reviewed

Shaftesbury: Protective Notation (PNT) reservation approved for this new site

Sherwood Park: Strathcona Natural History Club tour: May 21, 1994

Sundre Red Deer: Natural Area reservation (PNT) deleted on 46.507 hectares

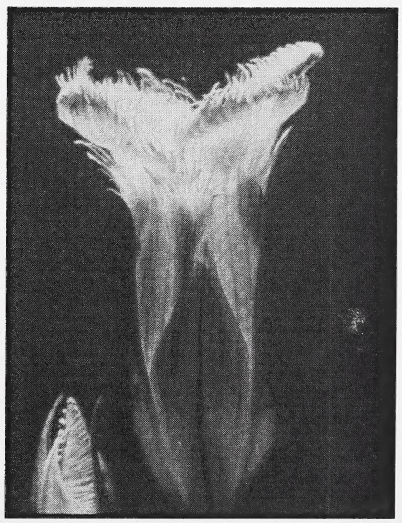
Tawatinaw: Mineral surface lease (MSL) for wellsite approved

Wagner: Edmonton Plant Study Group May Species Count May 29, 1994; Edmonton Mycological Club: June /94; Edmonton Plant Study Group Annual Orchid Walk June 12, 1994; Highland Park School held field trip

Volunteer Steward Directory

Some stewards have requested a Volunteer Steward Directory. Such a directory would provide stewards with a means of contacting fellow stewards for joint inspections, monitoring respective sites, or any special projects that could be done jointly.

Inclusion of your name in the directory is voluntary. If you do NOT wish to have your name included please contact Sandra at 427-5209 no later than October 30.



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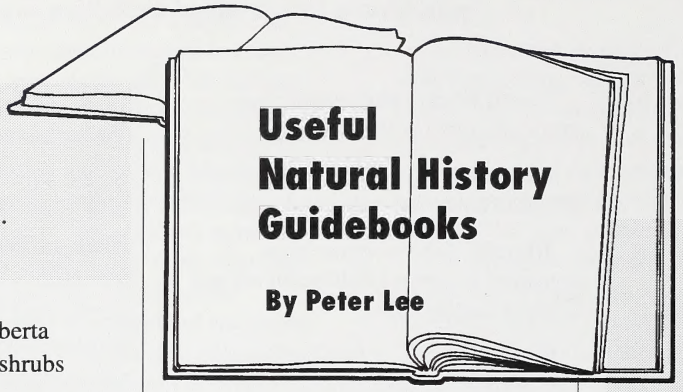

Useful Natural History Guidebooks

By Peter Lee

Trees and Shrubs of Alberta. 1990. Kathleen Wilkinson. Lone Pine Publishing. 191 pp.

Contents:

- Natural regions of Alberta
- Coniferous trees and shrubs

Mosses, Lichens and Ferns of Northwest North America. 1988. Dale H. Vitt, Janet E. Marsh, Robin B. Bovey. Lone Pine Publishing. 296 pp.

Contents:

- History of collectors
- Climate and vegetation zones of northwestern North America
- Collection, preservation and study
- Notes on photography
- Mosses: their structure and biology
- Liverworts: their structure and biology
- Lichens: their structure and biology
- Horsetails, club mosses and ferns: their structure and biology

Mushrooms of Western Canada 1991. Helene M.E. Schalkwijk-Barendsen. Lone Pine Publishing. 414 pp.

Contents:

- What is a mushroom
- Taxonomy
- Field identification
- Climate, fruiting bodies and distribution
- Classification
- Species description

Coming Events

Wagner Natural Area Annual Members' Night: Thursday, October 20, 7:30 pm in the Provincial Museum Ground floor lecture room

Dennis Jonker and Jan Carroll of the North Bruderheim Natural Area Society will be describing their experiences as stewards of this sandhills natural area northeast of the city.

Everyone welcome!

Sherwood Park Natural Area Open House and Volunteer Recognition Event: Saturday, October 15

The Sherwood Park Natural Area Volunteer Stewards and Strathcona County Recreation, Parks and Culture invite you to attend. Tours of the site, including the new bird watching stand, will be available.

For More Information...
Call Jean Funk at 467-2211.

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